



Dynamic topography and microplate motions in the Mediterranean

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The Mediterranean hosts a diffuse tectonic boundary between the Nubia and Eurasia plates composed of a mosaic of microplates (Adria, Anatolia and Aegea) that move independently from the overall plate convergence. There are pronounced topographic features, such as deep backarc basins, intraplate plateaux and uplifting orogenic belts, whose origin is still debated. We compute global mantle flow based on recent, high resolution seismic tomography to investigate the associated, multi-scale circulation patterns. Comparison with tectonic, geodetic and morphologic features shows that upper mantle flow related to the actively subducting Hellenic and Calabria slabs drives Adria and Anatolia motions. These currents produce dynamic topography which explains the subsidence of the Tyrrhenian and Aegean backarc basins and the uplift of plateaux over Iberia and eastern Anatolia. Our findings emphasize the importance of small-scale upper mantle convection for explaining the complex kinematic patterns inside mobile belts.